

"The Asiago Pathfinder for HARPS-N
large program"

+

"A PSF-based approach to Kepler/K2
data"

PI: L.R.Bedin

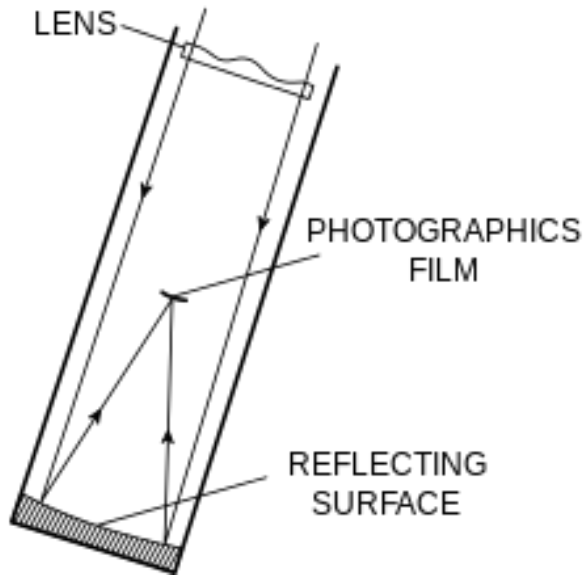
Mattia Libralato (ora a STScI),
Domenico Nardiello (ancora qui a UniPD)

Padova, OAPD, Dicembre 13, 2017

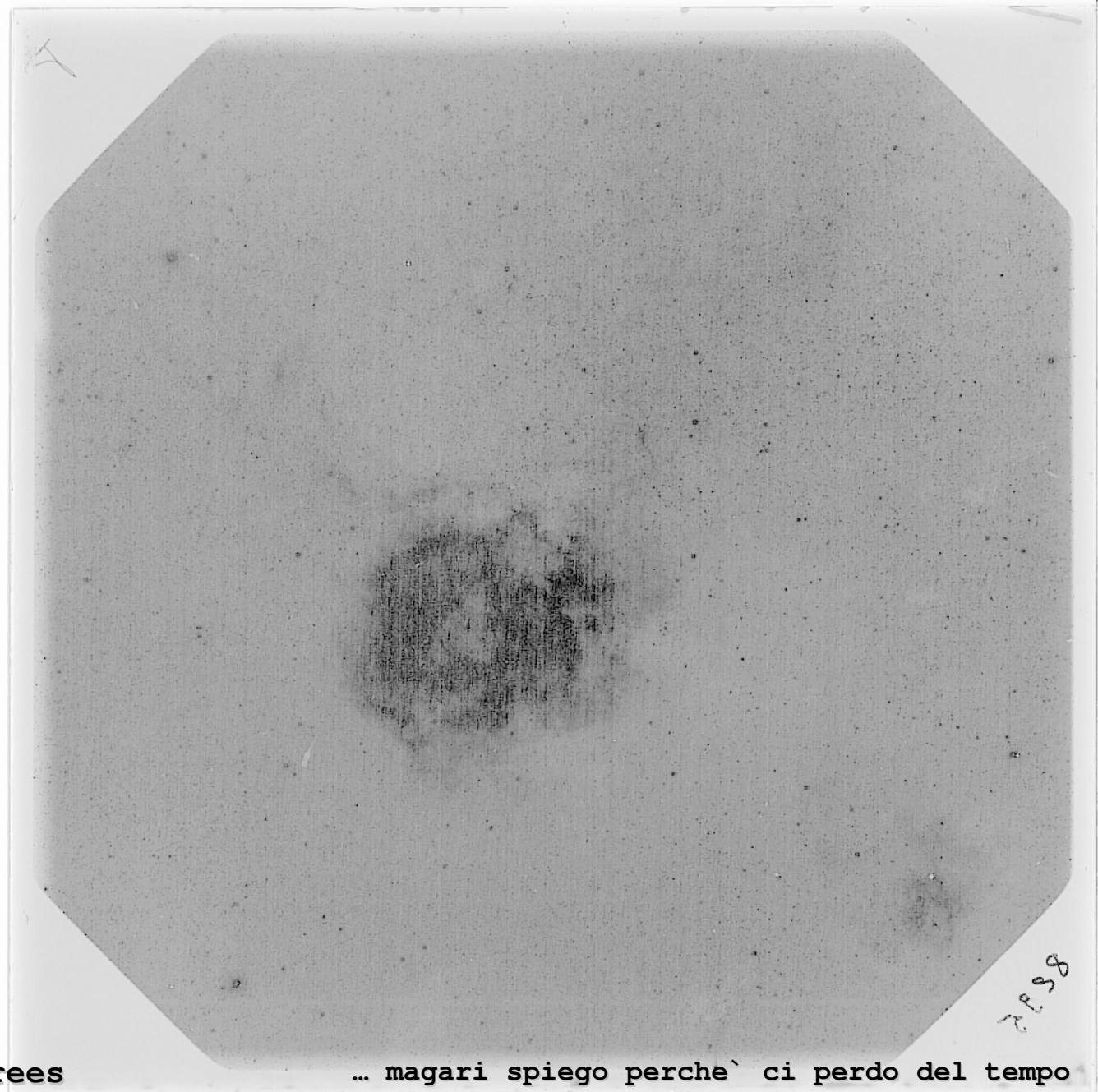
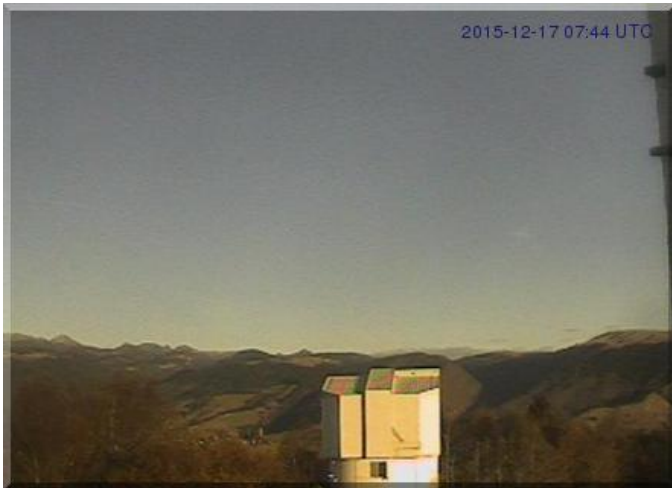


The Asiago Great Schmidt

Photographics plate sizes 20 cm x 20 cm



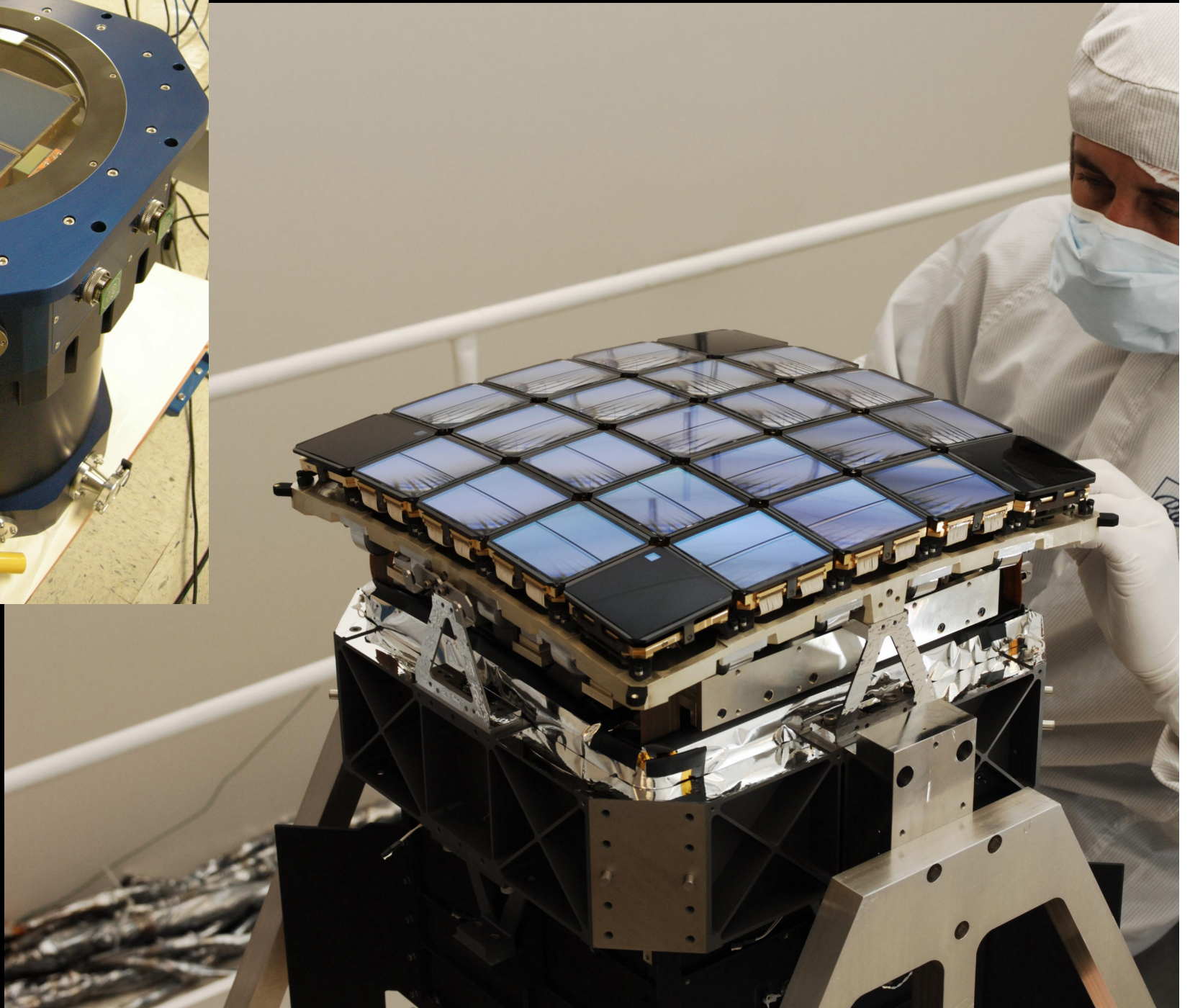
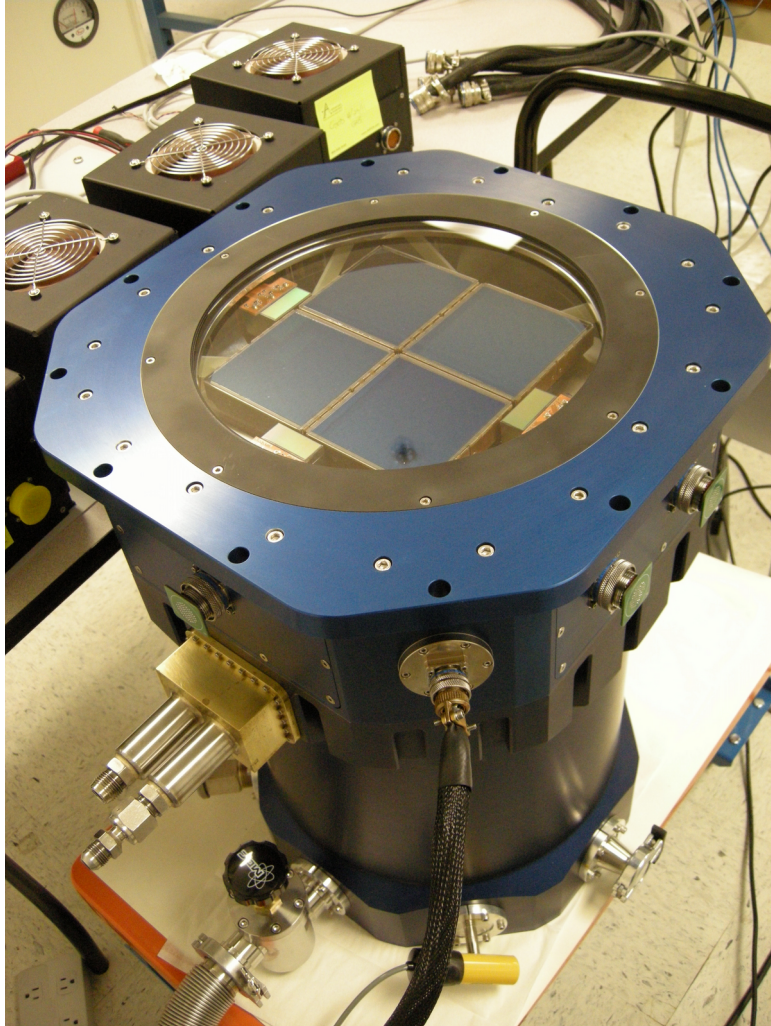
Lastra correttrice 67cm - 140° posto
Sferico primario 92cm - 100° posto



Field of view ~5.1 x 5.1 sq.degrees

... magari spiego perche` ci perdo del tempo

Quello che sognamo ...



... quello che abbiamo trovato!



... poi parliamo dell'upgrade

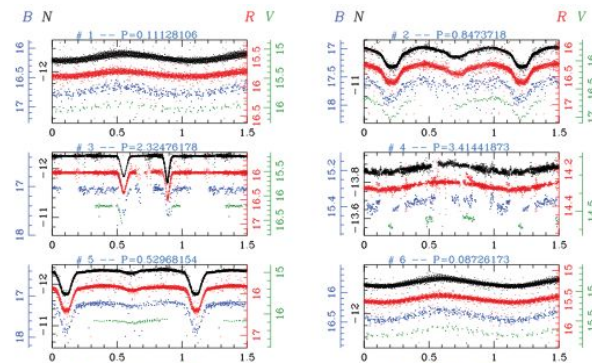
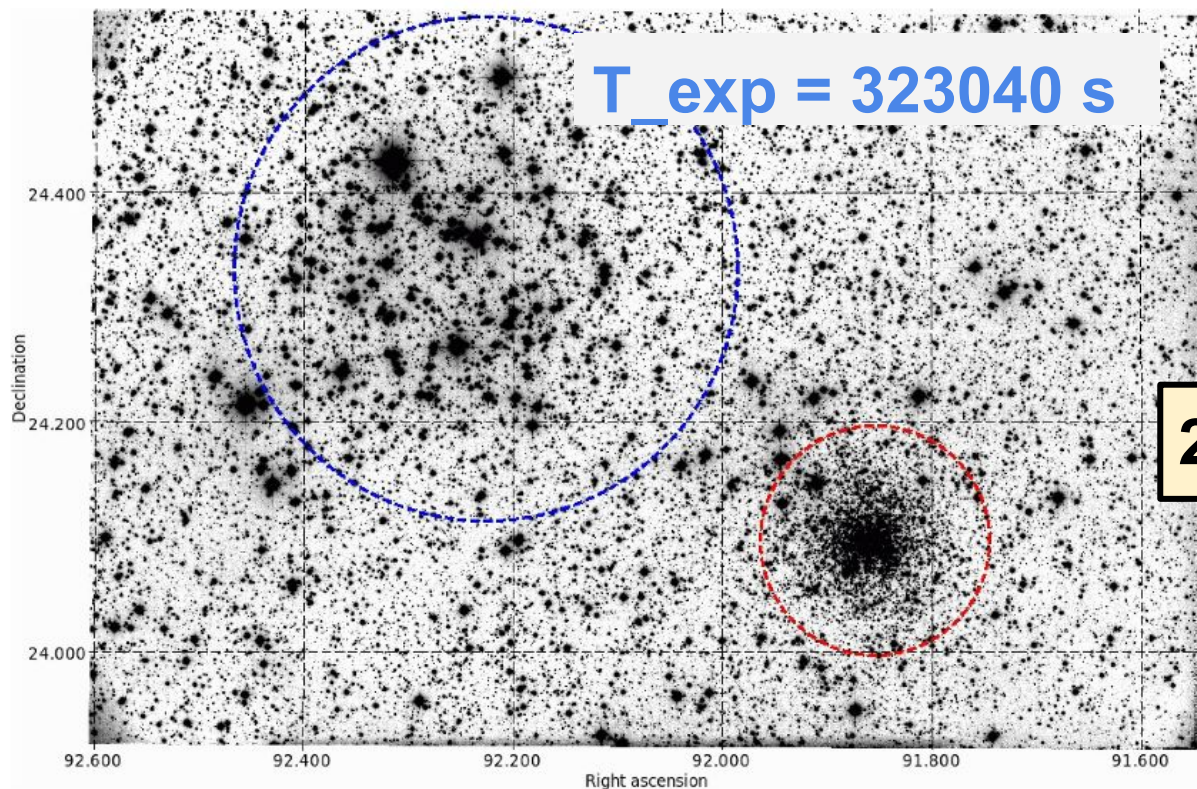
Publicazioni referate:

1. Nardiello, Libralato, Bedin et al. 2016, MNRAS, 463, 1831
2. Libralato, Nardiello, Bedin et al. 2016, MNRAS, 463, 1780
3. Gizis et al. 2016, AJ, 152, 123
4. Libralato, Bedin, Nardiello et al. MNRAS, 456, 1137
5. Nardiello, Libralato, Bedin et al. 2016, MNRAS, 455, 2337
6. Nardiello, Bedin, Libralato et al. 2015, MNRAS, 447, 3536

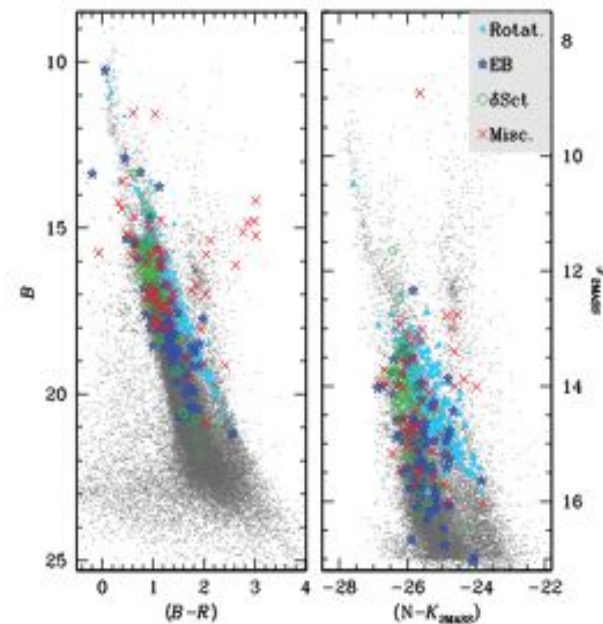
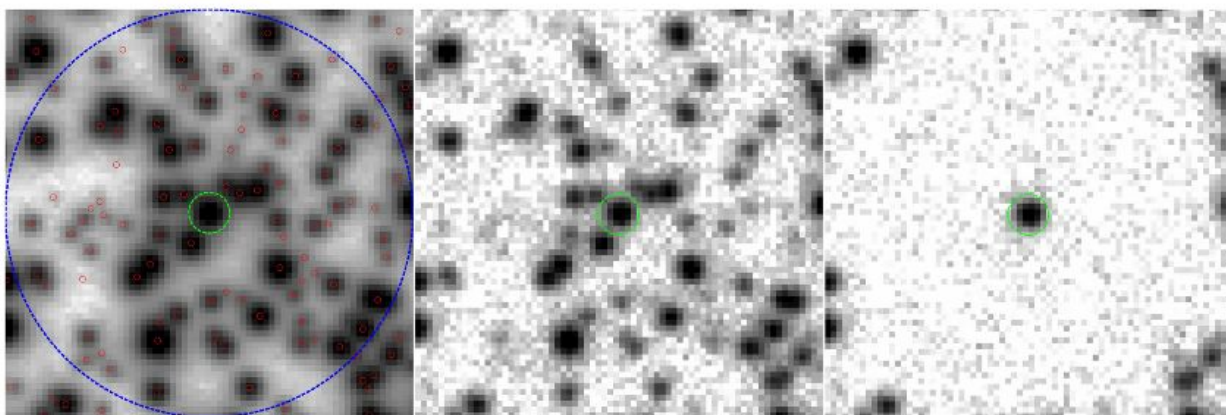
7. Sandquist et al. 2018 (under review now)

Nardiello will give an overview

Variables in NGC2158 & M35 -- Asiago Schmidt 67/92 cm



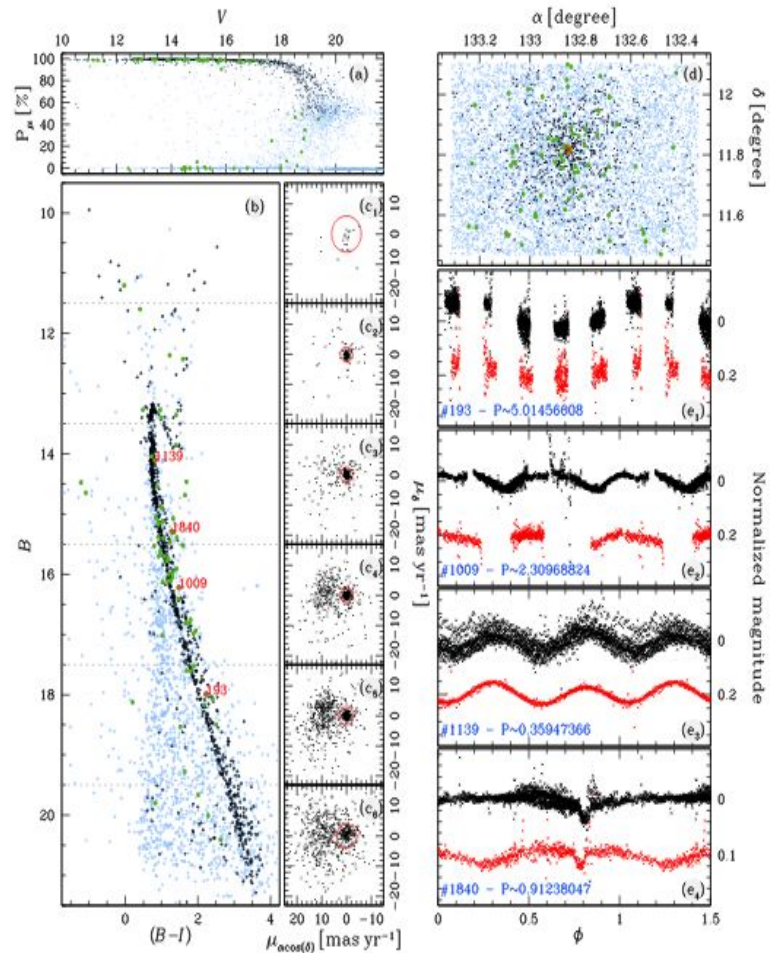
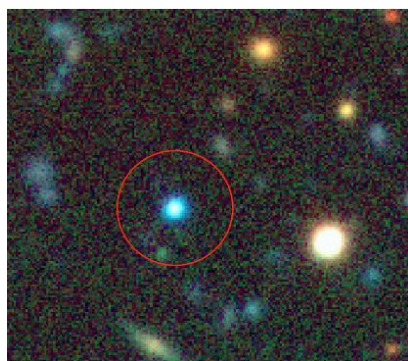
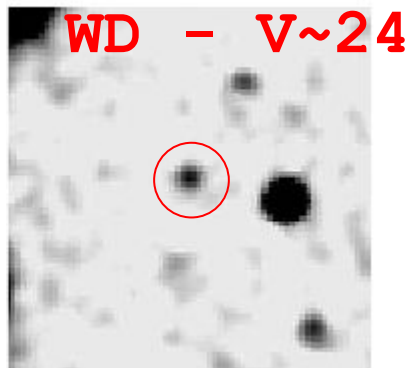
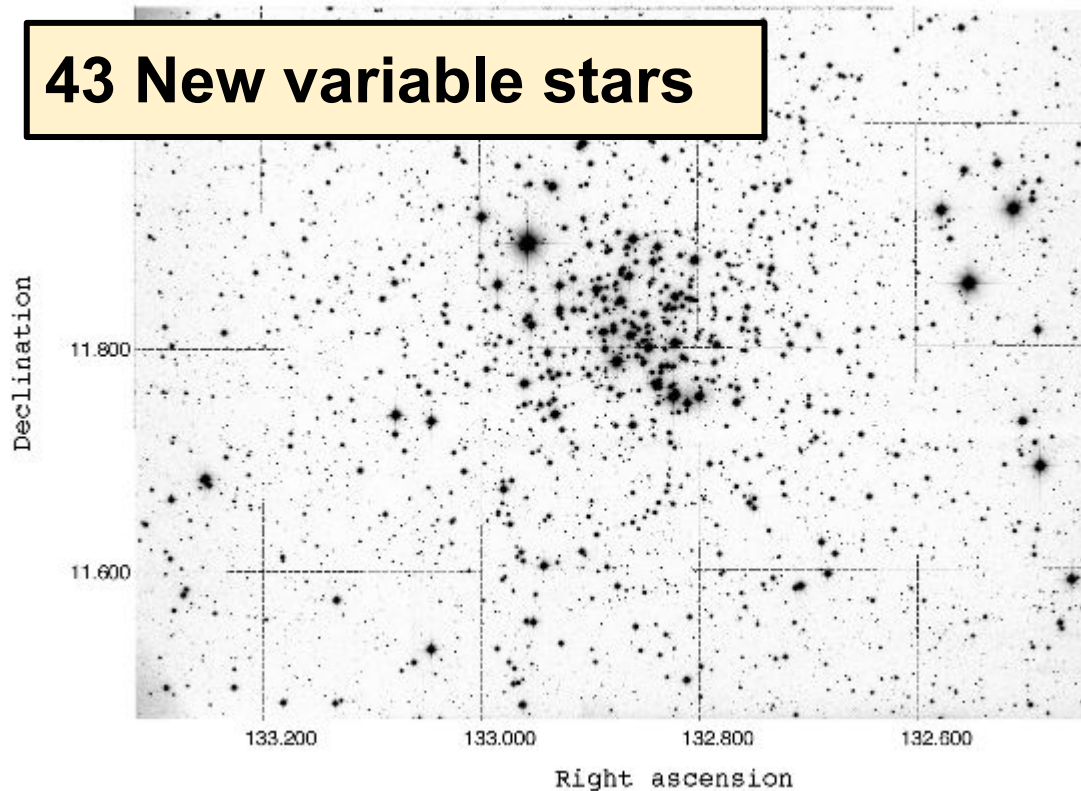
273 New variable stars



Nardiello et al. 2015

Variables in M67 -- Asiago Schmidt 67/92 cm

43 New variable stars



Asiago Schmidt 67/92 cm

Large Binocular Telescope
(Bellini et al. 2010)

Nardiello et al. 2016

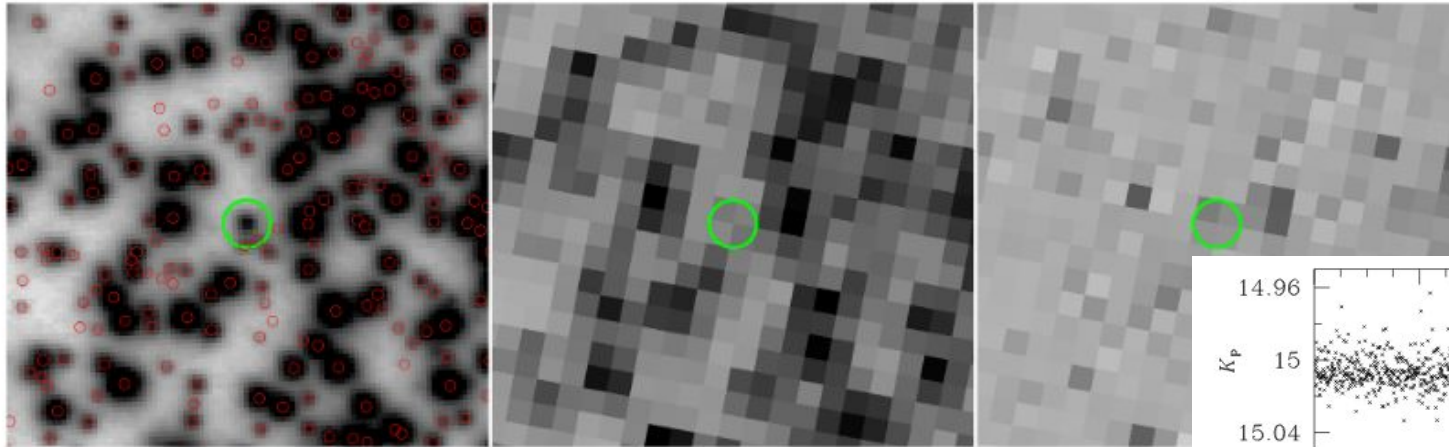
Variables in NGC2158 & M35 -- Kepler - Schmidt synergy

A PSF-based approach to *Kepler/K2* data – I. Variability within the *K2* Campaign 0 star clusters M 35 and NGC 2158*

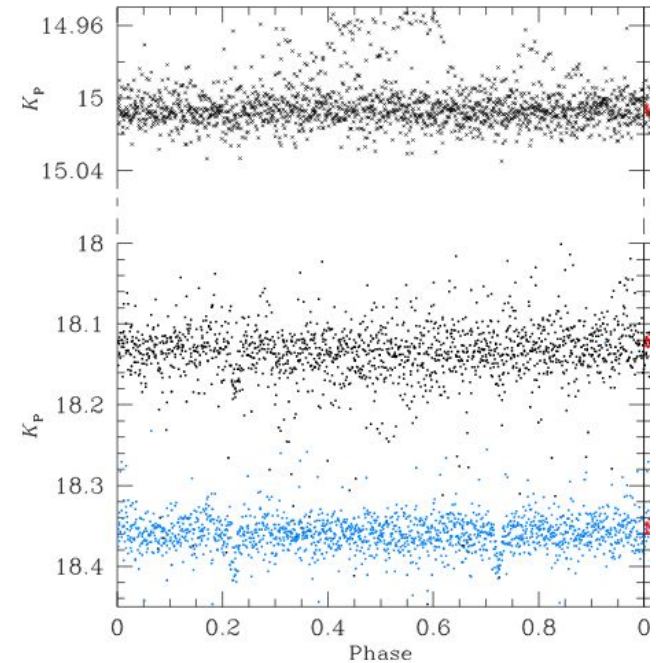
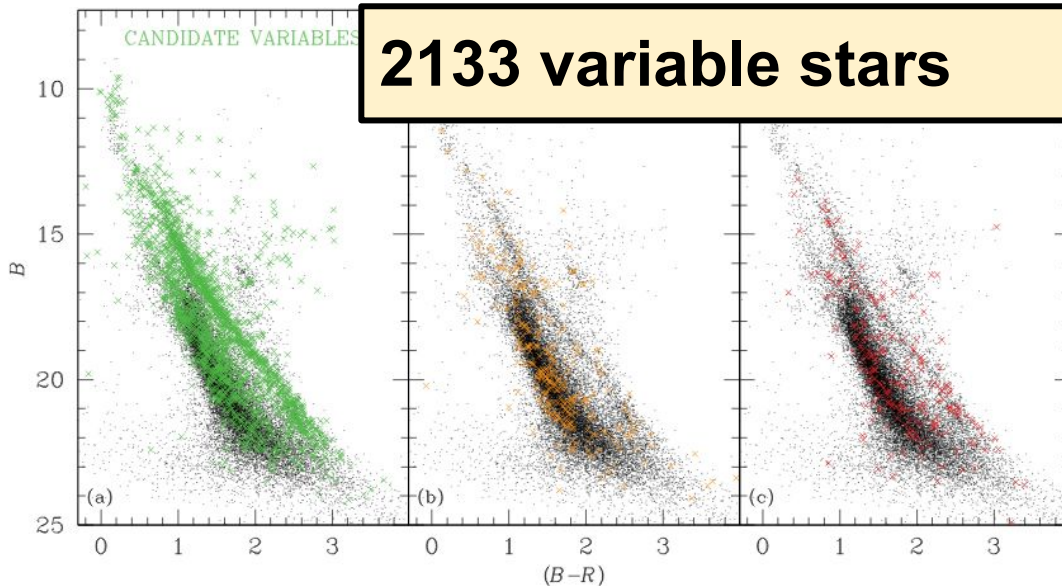
M. Libralato,^{1,2}† L. R. Bedin,² D. Nardiello^{1,2} and G. Piotto^{1,2}

Paper I

TR1



2133 variable stars



Libralato et al. 2016

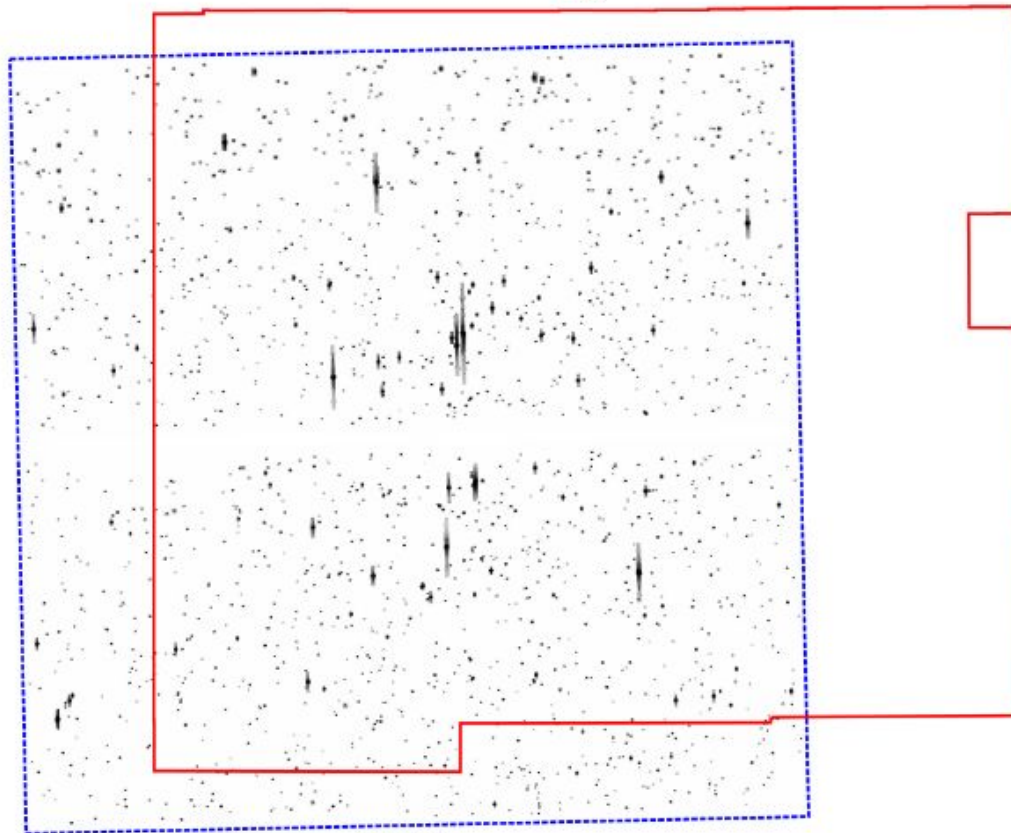
Variables and exoplanets in M44 -- Kepler - Schmidt synergy

A PSF-based approach to *Kepler/K2* data – II. Exoplanet candidates in Praesepe (M 44)★

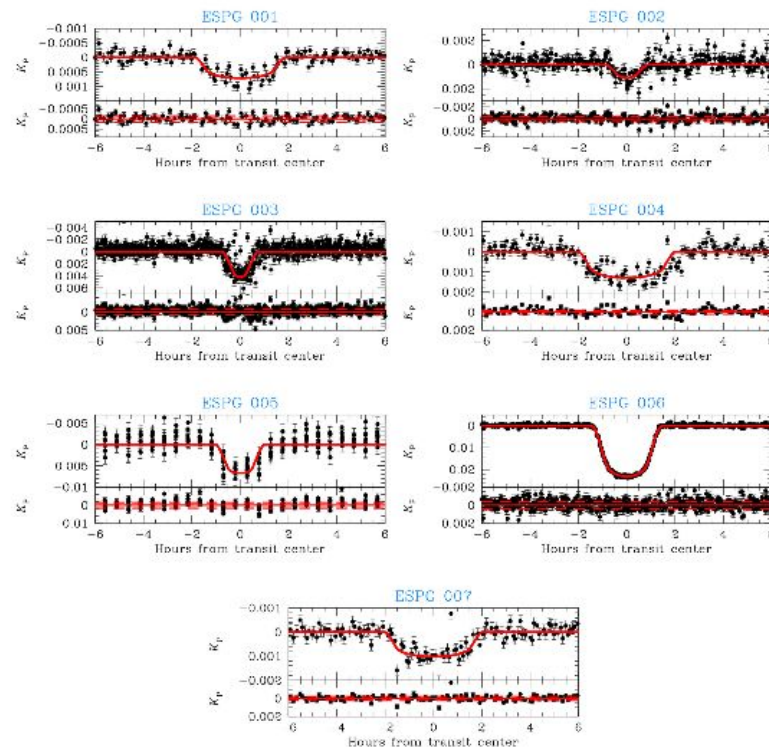
M. Libralato,^{1,2†} D. Nardiello,^{1,2} L. R. Bedin,² L. Borsato,^{1,2} V. Granata,^{1,2}
L. Malavolta,^{1,2} G. Piotto,^{1,2} P. Ochner,² A. Cunial^{1,2} and V. Nascimbeni^{1,2}

Paper II

AIC



7 candidate exoplanets



1680 variable stars

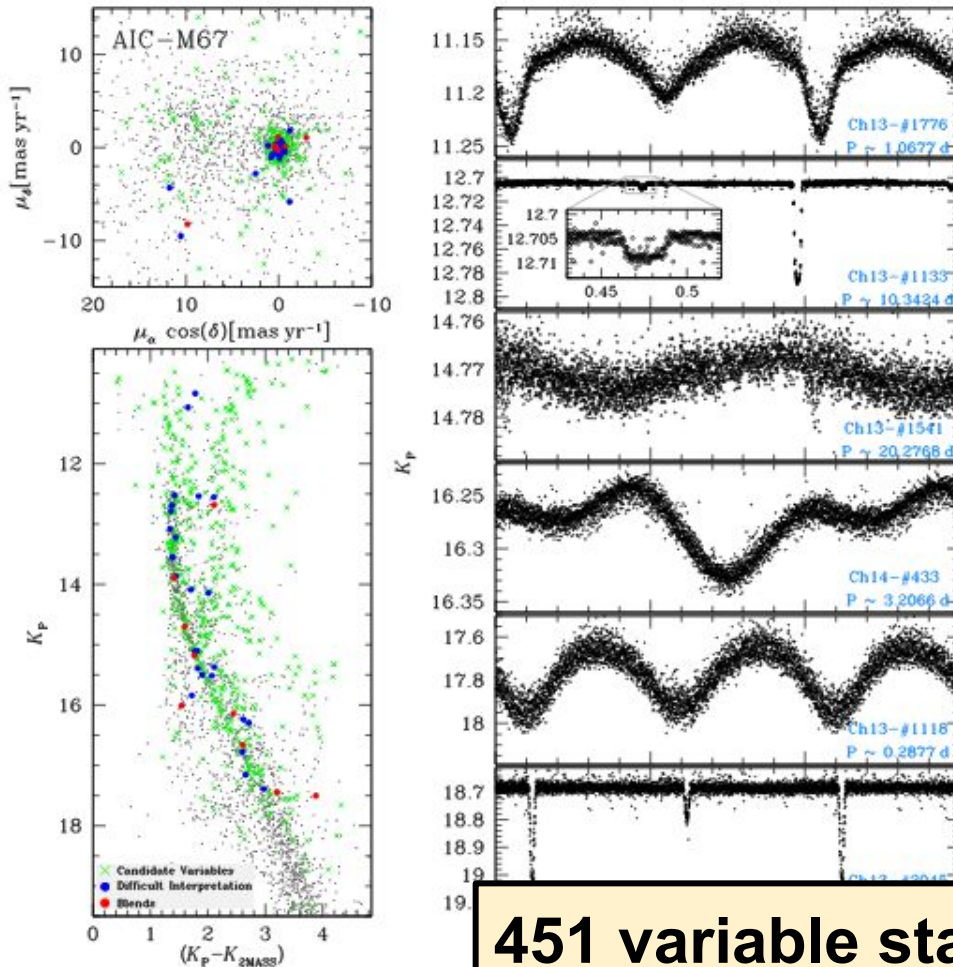
Libralato et al. 2016

Variables and exoplanets in M67 -- Kepler - Schmidt synergy

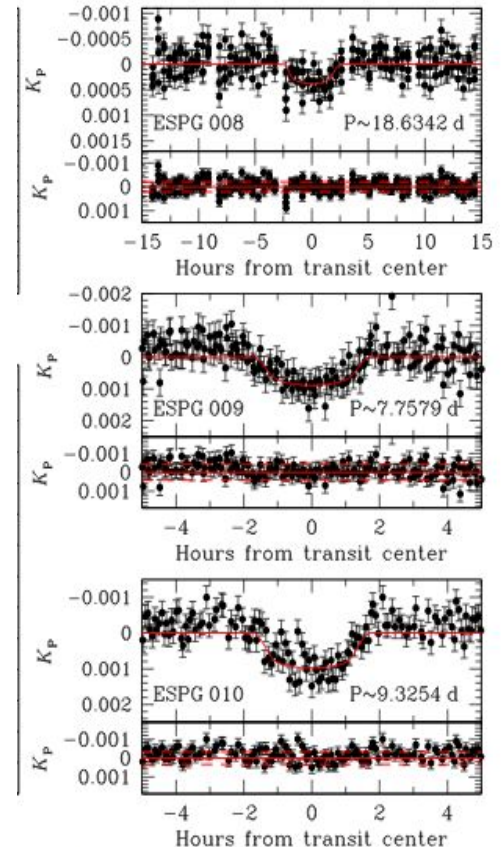
A PSF-based approach to *Kepler/K2* data – III. Search for exoplanets and variable stars within the open cluster M 67 (NGC 2682)*

D. Nardiello,^{1,2}† M. Libralato,^{1,2} L. R. Bedin,² G. Piotto,^{1,2} L. Borsato,^{1,2} **Paper III**
V. Granata,^{1,2} L. Malavolta,^{1,2} and V. Nascimbeni^{1,2}

3 candidate exoplanets

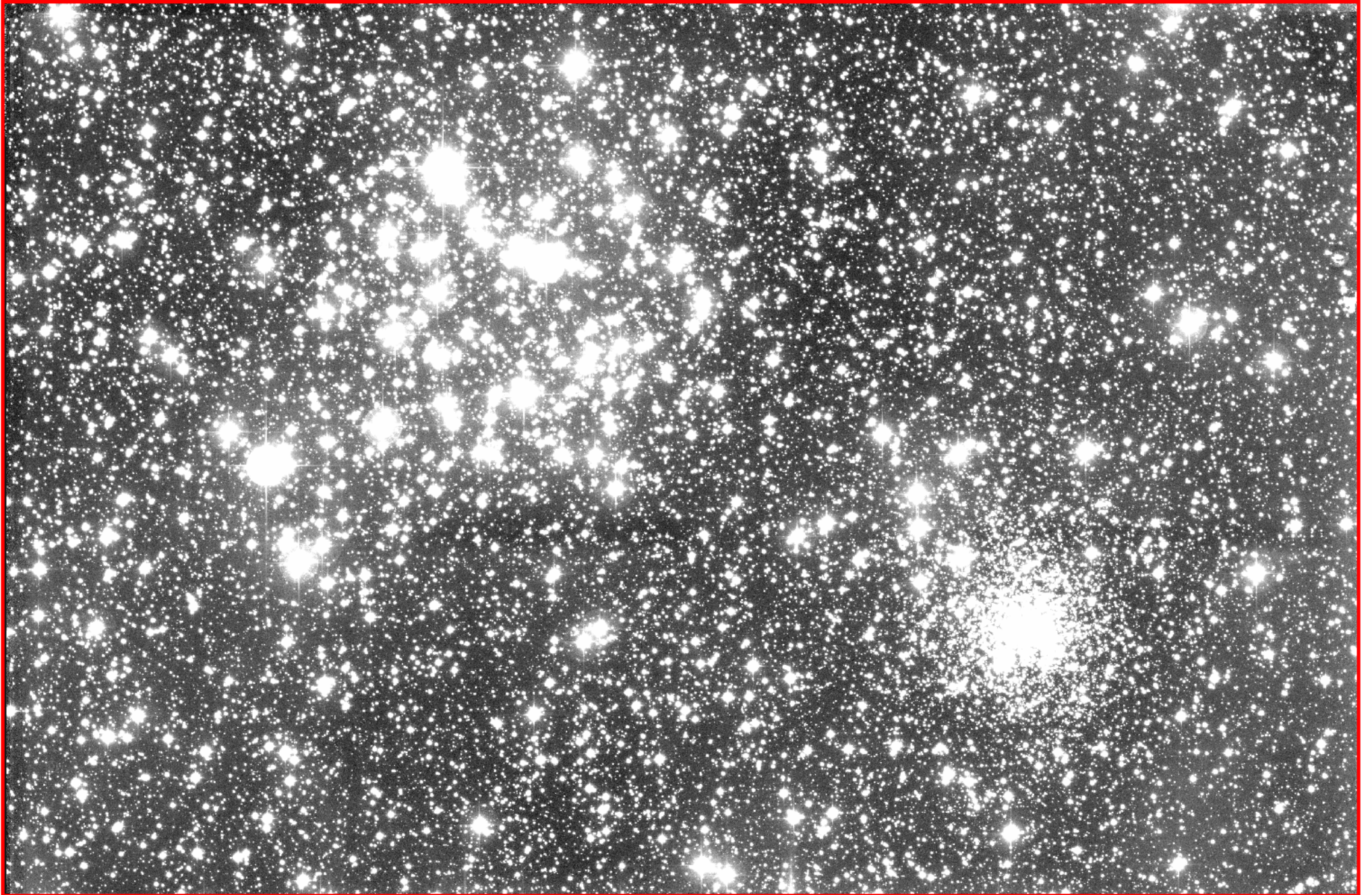


451 variable stars



Nardiello et al. 2016

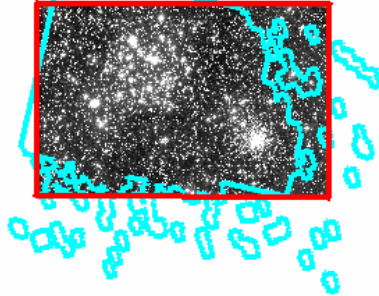
our current CCD: 4050 x 2672 pixels (9 microns)



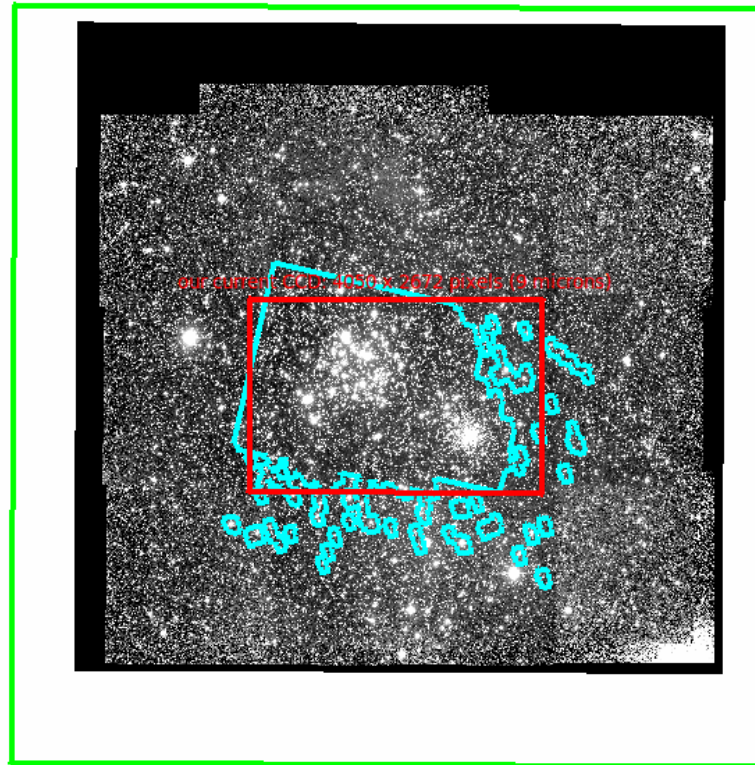
5.1 x 5.1 sq. degrees available at the Great Asiago Schmidt

the camera of our wishes 10500x10500 pixels² (9 microns)

our current CCD: 4050 x 2672 pixels (9 microns)



the camera of our wishes 10500x10500 pixels² (9 microns)





FINE .

The New Camera, i.e., from 2.5k x 4k → to 4k x 4k

4096 (H) x 4096 (V) Full Frame CCD Image Sensor

Description

The KAF-16803 image sensor is a redesigned version of the popular KAF-16801 image sensor (4096 (H) × 4096 (V) pixel resolution), with enhancements that specifically target the needs of high performance digital radiography applications. Improvements include enhanced quantum efficiency for improved DQE at higher spatial frequencies, lower noise for improved contrast in areas of high density, and anti-blooming protection to prevent image bleed from over exposure in regions outside the patient.

The sensor utilizes the TRUESENSE Transparent Gate Electrode to improve sensitivity compared to the use of a standard front side illuminated polysilicon electrode, as well as microlenses to maximize light sensitivity. When combined with large imaging area and small pixel size, the KAF-16803 provides the sensitivity, resolution and contrast necessary for high quality digital radiographs.

To simplify device integration, the KAF-16803 image sensor uses the same pin-out and package as the KAF-16801 image sensor.

Table 1. GENERAL SPECIFICATIONS

Parameter	Typical Value
Architecture	Full Frame CCD, Square Pixels
Total Number of Pixels	4145 (H) × 4128 (V) = 17.1 Mp
Number of Effective Pixels	4127 (H) × 4128 (V) = 17.0 Mp
Number of Active Pixels	4096 (H) × 4096 (V) = 16.8 Mp
Pixel Size	9.0 μm (H) × 9.0 μm (V)
Active Image Size	36.8 mm (H) × 36.8 mm (V) 52.1 mm Diagonal 645 1.3x Optical Format
Aspect Ratio	1:1
Horizontal Outputs	1
Saturation Signal	100,000 electrons
Output Sensitivity	22 μV/e ⁻
Quantum Efficiency (550 nm)	60%
Responsivity (550 nm)	28.7 V/μJ/cm ²
Read Noise (f = 4 MHz)	9 e ⁻
Dark Signal	3 e ⁻ /pix/sec
Dark Current Doubling Temperature	6.3°C
Linear Dynamic Range (f = 4 MHz)	80 dB
Blooming Protection (4 ms Exposure Time)	> 100 X Saturation Exposure
Maximum Date Rate	10 MHz
Package	CERDIP (Sidebraced, CuW)
Cover Glass	AR Coated, 2 Sides and Taped Clear

NOTE: Parameters above are specified at T = 25°C unless otherwise noted.



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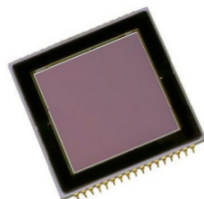


Figure 1. KAF-16803 CCD Image Sensor

Features

- TRUESENSE Transparent Gate Electrode for High Sensitivity
- High Resolution
- Large Image Area
- High Quantum Efficiency
- Low Noise Architecture
- Board Dynamic Range

Application

- Medical
- Scientific

ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

The screenshot shows the SKYPOINT website interface. At the top, there is a navigation bar with links for 'chi siamo', 'dove siamo', 'contattaci', 'mappa del sito', and contact information. The main header features the SKYPOINT logo and a search bar. Below the header, there are several tabs for navigation: 'INFORMAZIONI', 'ACQUISTI FACILI', 'PRODOTTI', 'OFFERTE', 'NOVITÀ', 'OUTLET', 'MARCHE', 'USATO', 'SERVIZI', and 'PLANETARI'. The main content area displays the product 'Camera CCD Moravian G4-16000' with a large image and a price of 6,949.00 €. The page also includes a list of products, a quantity selector, and a 'Da ordinare' button. At the bottom, there is a table with technical specifications for different models.

Modello	CCD	ABG	Maschera colore	Risoluzione	Dimensione del pixel	Area del sensore	Tempo di scaricamento del frame
G4-9000	KAF-09000	100x	no	3056 x 3056	12 × 12 μm	36.7 × 36.7 mm	~ 11 s
G4-16000	KAF-16803	100x	no	4096 x 4096	9 × 9 μm	36.9 × 36.9 mm	~ 19 s



by Nardiello

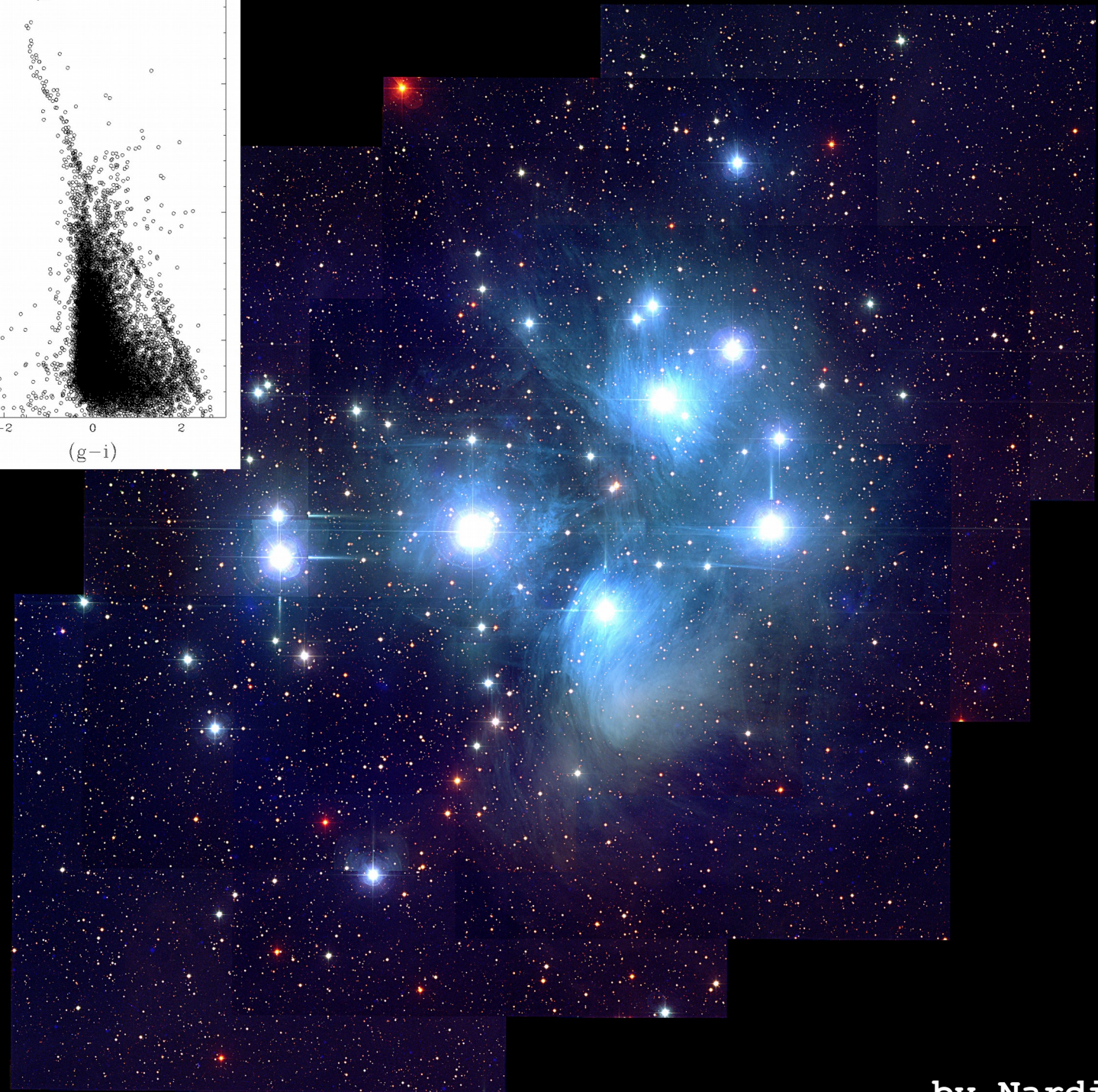
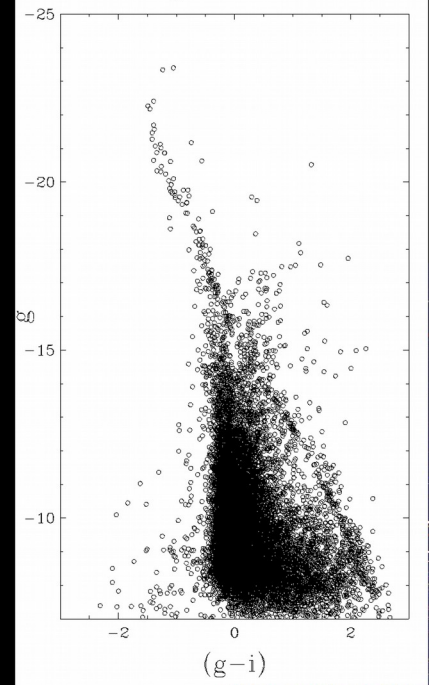


by R+



by R+

M45 @ Asiago Schmidt 67/92



by Nardiello